

# the BIT

*the Bulletin of Information Technology*

*July - September 2011*

## ANEKA

*Next generation Enterprise .NET Grid & Cloud  
Computing platform*

## EMOTION SENSORS

## ACC-2011

*First International Conference on Advances  
in Computing and Communications*

## Top-5

*Android smartphones 2011*

## REDTACTON

*Advanced Communication through Human body*



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## ‘Industry Institute Interaction’



**Prof. Kuttyamma A.J.**  
**Professor & HOD, Department of IT**

*In our country academia -industry interrelations are not very strong. Both industry and academia are not taking necessary initiatives to strengthen the relations as they do not consider this as a priority issue.*

*The changing international economic order, globalization of education, need for quality assurance in higher education, provision of need based educational opportunities etc. made academia to go in touch with industry. The need for keeping pace with technology developments and competition, the constantly changing management paradigms, growing complexity of business environment, the need for innovation, creativity, continuous upgradation of skills etc. necessitates industry to go hand in hand with academia.*

*The academia industry interactions have been widely discussed by all concerned and are an urgent need of the time. Both, industry and institutes need to build closer relations and build resources for the country.*

*The industry institute interaction can be defined as interactive and collaborative arrangement between academic institutions and industrial/business corporations for the achievement of mutually beneficial goals and objectives.*

*Usually institutes look for placement and internships for their students and industry for fresh recruits well equipped with right knowledge, skill and attitude and empowered to contribute to organizations growth.*

*When Industries need specialized skills or analytical approach to their problems, the institutions can*

*provide support to industries with an affordable and significant contribution in terms of consultancy and industries can help by investments in creating /expanding infrastructure of academic institutions.*

*Today in Indian business/industry there is a wide gap in rapidly growing industry needs and those provided by the higher education institutional system. This is addressed by the government, industry and institutions and steps are taken to bridge the gap.*

*Innovation can be motivated by bringing three kinds of minds and experiences together – Faculty, who have knowledge of fundamentals; Students who have great enthusiasm, full of ideas and sprit to conquer the world; Industrialists, who are capable of converting these ideas into products. Government and Department of Science and Technology should arrange common platforms for bringing them together and also support them.*

*In India only few top institutions like IITs, IIMs and few CSIR Labs are benefited by Industry Institute Interaction. Other institutions should also come forward and Government Departments should support them by providing government funded research work and facilities for the progress of science and its utilization. Major private industries also should take interest in this and benefit in the process.*

*For increasing academia-industry collaborations, the curricula should be aligned with the requirements of industry and more practical training should be given to students. In short, faculty, students, research and curricula may be aligned with industry and then only a strong Industry Institute Interaction will take place.*

*There is also the need to develop an apt research base in academic institutions that enables the industry to rely on and convert the research into wealth. In India, research is not a priority and wherever research is carried out is not focused and is of purely academic interest. Few people get into application-oriented research which will attract industries to academic institutions.*

*We need more and more people to get into engineering and technology for industry-oriented research. The importance of engineering and technology can barely be overemphasized, considering that the economic progress of a country, including industrialization and generation of wealth, is largely dependent on how well these fields are developed.*

## RedTacton: Advanced Communication through Human body



Sheena K S

Asst. Professor, DIT

Human Area Networking technology uses the surface of the human body as a safe, high speed network transmission path. NTT, the Japanese telecoms group, and the team of scientists that invented the Red Tacton system. RedTacton is a break-through technology that, for the first time, enables reliable high-speed Human Area Networks (HAN). In the past, Bluetooth, infrared communications (IrDA), radio frequency ID systems (RFID), and other technologies have various fundamental technical limitations that constrain their usage, such as the precipitous fall-off in transmission speed in multi-user environments producing network congestion. Using a new super-sensitive photonic electric field sensor, RedTacton can achieve duplex communication over the human body at a maximum speed of 10 Mbps.

RedTacton takes a different technical approach. Instead of relying on electromagnetic waves or light waves to carry data, RedTacton uses weak electric fields on the surface of the body as a transmission medium. "Tacton" because with this technology, communication starts by touching (Touch), leading to various actions (Act on) and the color red to convey the meaning of warmth in communication.

A RedTacton transmitter couples with extremely weak electric fields on the surface of the body. The weak electric fields pass through the body to a RedTacton receiver, where the weak electric fields affect the optical properties of an electro-optic crystal. The extent to which the optical properties are changed is detected by laser light which is then converted to an electrical signal by a detector circuit.

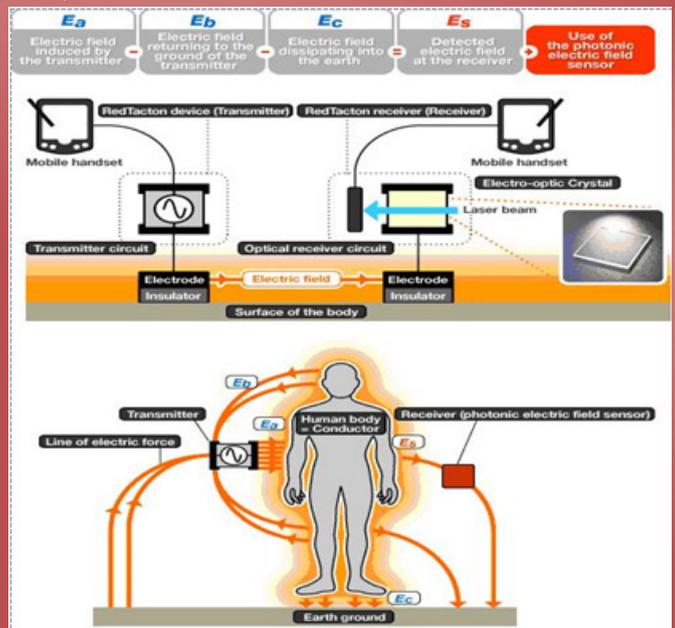
RedTacton has three main functional features:

- Touch - Touching, gripping, sitting, walking, stepping and other human movements can be

the triggers for unlocking or locking, starting or stopping equipment, or obtaining data. Using RedTacton, communication starts when terminals carried by the user or embedded in devices are linked in various combinations through physical contact according to the human's natural movements.

- Broadband and Interactive - Duplex, interactive communication is possible at a maximum speed of 10Mbps. Communication speed can deteriorate in crowded spaces due to a lack of bandwidth with other technologies like Bluetooth, Infra red. In RedTacton the transmission path is on the surface of the body so transmission speed does not deteriorate in congested areas where many people are communicating at the same time.

- Any media - In addition to the human body, various conductors and dielectrics can be used as transmission media. Conductors and dielectrics may also be used in combination.



Fig(1): Communication using RedTacton Working

Using a new super-sensitive photonic electric field sensor, RedTacton can achieve duplex communication over the human body at a maximum speed of 10 Mbps.

1. The RedTacton transmitter induces a weak electric field on the surface of the body.
2. The RedTacton receiver senses changes in the weak electric field on the surface of the body caused by the transmitter.
3. RedTacton works on the principle that the optical properties of an electro-optic crystal can vary

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according to the changes of a weak electric field.

4. RedTacton detects changes in the optical properties of an electro-optic crystal using a laser and converts the result to an electrical signal in a optical receiver circuit.

RedTacton uses the electric field that occurs naturally on the surface of the human body for communication. Transmitter and receiver electrodes are covered with an insulating film. No current flows into the body from the RedTacton transceiver.

-There is no current flowing from the RedTacton transceiver; however, the body indirectly receives a minute electric field. This causes electrons already present inside the body to move, creating a minute displacement current. This displacement current is similar to those occurring in everyday life.

### Conclusion

RedTacton is situated directly between wireless and wired communication. Human society is entering an era of ubiquitous computing, when networks are seamlessly interconnected and information is always accessible at our fingertips. Our body could soon be the backbone of a broadband personal data network. The focus on ubiquitous service has brought about the shortening of distances in communication.

## ANEKA: Next generation Enterprise .NET Grid & Cloud Computing platform.



**Sijo Cherian**  
Assistant Professor, DIT

Aneka is a platform and a framework for developing distributed applications on the Cloud. It harnesses the spare CPU cycles of a heterogeneous network of desktop PCs and servers or datacenters on demand. Aneka provides developers with a rich set of APIs for transparently exploiting such resources and express-

ing the business logic of applications by using the preferred programming abstractions. System administrators can leverage on a collection of tools to monitor and control the deployed infrastructure. This can be a public cloud available to anyone through the Internet, or a private cloud constituted by a set of nodes with restricted access.

Aneka is based on the .NET framework and this is what makes it unique from a technology point of view as opposed to the widely available Java based solutions. While mostly designed to exploit the computing power of Windows based machines, which are most common within an enterprise environment, Aneka is portable over different platforms and operating systems.

Aneka is an implementation of the Platform as a Service approach, which focuses on providing a set of APIs that can be used to design and implement applications for the Cloud.

The framework is based on an extensible and service oriented architecture that simplifies the deployment of clouds and their maintenance and provides a customizable environment that supports different design patterns for distributed applications.

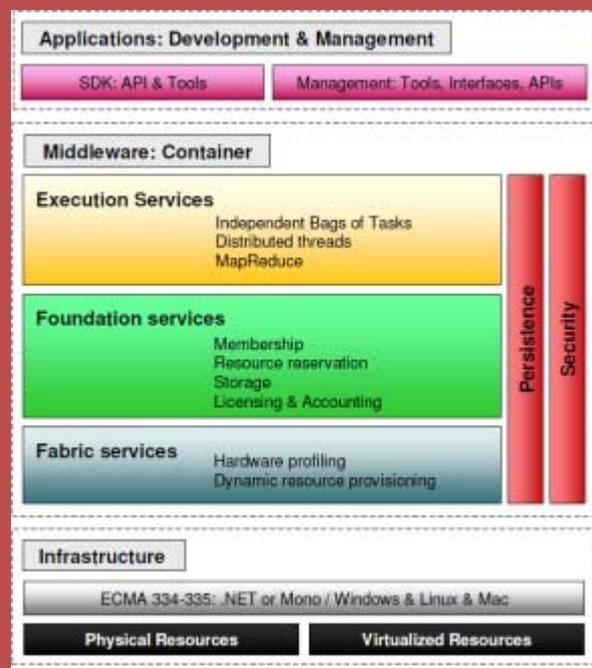


Figure. Overview of the Aneka framework

The heart of the framework is represented by the Aneka Container which is the minimum unit of deployment for Aneka Clouds and also the runtime en-

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environment for distributed applications. The container hosts a collection of services that perform all the operations required to create an execution environment for applications. They include resource reservation, storage and file management, persistence, scheduling, and execution. Moreover, services constitute the extension point of the container which can be customized to support specific needs or scenarios.

By using services different programming models have been integrated in Aneka. A programming model is a specific way of expressing the execution logic of distributed applications. It provides some familiar abstractions that developers can use to define the execution flow of applications and its component. From an implementation point of view a programming model also includes a collection of services – more precisely scheduling and execution services – that make possible its execution on top of Aneka Clouds. Aneka provides a reference model for implementing new programming models and the current release supports three different programming models: independent bag of tasks, distributed threads, and MapReduce. In order to simplify the development with Aneka a Software Development Kit contains ready to use samples, tutorials, and a full API documentation which helps starting to investigate the large range of features offered by the framework.

Aneka also provides support for deploying and managing clouds. By using the Management Studio it is possible to set up either public or private clouds, monitor their status, update their configuration, and perform the basic management operations. Moreover, a set of web interfaces allows to programmatically managing Aneka Clouds. The flexibility of Aneka has been demonstrated by using the framework in different scenarios: from scientific research, to educational teaching, and to industry. A set of case studies representing the success stories of Aneka has been reported to demonstrate that Aneka is mature enough to address real life problems used in a commercial environment.

Aneka is under continuous development. The development team is now working on providing full support for the elastic scaling of Aneka Clouds by relying on virtualized resources. Initial tests have been successfully conducted in using Amazon EC2 as a provider of virtual resources for Aneka. This feature, and the ability of interacting with other virtual machine managers, will be included in the next version of the management APIs that will simplify and extend the set of management tasks available for Aneka Clouds.

## EMOTION SENSORS



**Mary John,**  
**Assistant Professor, DIT**

Tied like a watch over the wrist, Affectiva's Q-Sensor is a useful tool in determining the emotion levels of Autistic patients. Patients affected by Autism normally won't show any symptoms until they turned violent. Thus this sensor is a useful device in the early detection of patient's stress levels.

In essence it is an Ohm-meter which measures the moisture level between two points of the skin; the moisture content varies according to various emotion levels. This is monitored remotely by using personal computers, assisted by suitable software.



One of the difficulties faced while using the device is that it often fails to distinguish between positive symptoms and adverse signals. In it's simplest form, a direct monitoring device like video camera will be useful to turn around this difficulty. Even higher, it can be used in conjunction with sophisticated devices like "brain-mappers" to enable precise stress monitoring.

Other areas of interest will include day-to-day stress management of human, marketing management, advertising etc.

# Top-Five Android smartphones 2011



Balu V Thayil, S7 IT

## #2 Motorola Atrix 4G



*Atrix 4G the holder of the title” future of mobile computing” can be the best buy for you, it’s stylish and speedy with its dual core processor and gives you connectivity with ease anytime and anywhere.*

**DISPLAY:** 4.0 inch display

**OS:** Android 2.2

**RAM:** 1GB on board

**CAMERA:** an 5-megapixel camera with dual flash

**BATTERY:** 1,930mAh battery

**PROCESSOR:** dual-core processor

## #3 LG Optimus Black



*Slim and sleek LG Optimus Black gives you bright and energy efficient display with 4 inch NOVA screen.*

**DISPLAY:** 4.0 inch display (slim upto 0.36 inch)

**OS:** Android 2.2(you will be ale to update to android 2.3)

**CAMERA:** Dual cameras are on board ( 2 megapixel for front)

**BATTERY:** 1,500mAh battery

*ONE-LINER: The Top-five collection of the smartest, stylist and fastest Android smartphones for you.*

*Well , Android and Google can only bring you “The best”. Most of the latest android smartphones are faster yet, relatively less expensive then the other smartphones. They are convenient to use, easy to handle and can be your style statement that perfectly defines your uniqueness. So, check out this special collection of Top-five android smartphones that were considered one of the best at the CES 2011.*

## #1 Samsung Infuse 4G



*Samsung infuse 4G, sleek and stylish, with the latest super amoled display that enhances contrast and outdoor readability,it’s an excellent smartphone with best broadband experience.*

**DISPLAY:** a 4.5-inch Super AMOLED Plus display

**OS:** Android 2.2

**MEMORY:** Expandable Memory- 32 GB Micro/SD card slot

**CAMERA:** an 8-megapixel camera with 1.3 megapixel secondary front-facing camera.

**PROCESSOR:** 1.2 GHz single core processor

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## #4 Motorola Droid Bionic



*Blazingly fast, high power smartphone gives you the smoothest smartphone experience.*

*DISPLAY: 4.3 inch display and HD video recording*

*OS : Android 2.2*

*RAM : 512 MB*

*BATTERY: Standard battery, Li-Po 1930 mAh*

*CAMERA: an 8-megapixel back camera and a front-facing video calling camera.*

*PROCESSOR: dual-core processor*

## #5 Sony Ericsson Xperia Arc

*This powerful android smart phone with excellent camera and ultra-thin body can be your perfect style statement.*



*ment.*

*DISPLAY: 4.2 inch display*

*OS: Android 2.3*

*MEMORY: 512 MB Internal Memory*

*CAMERA: an 8-megapixel camera at back with a video camera on the front*

*BATTERY: Standard battery, Li-Po 1500 mAh*

*PROCESSOR: 1GHz processor*

## National Workshop on Network simulation Using NS2



*A Three day national workshop was conducted by Department of IT on Network simulation using NS2. This was conducted from 26th April to 28th April in association with ISTE, Kerala Chapter and CSI Cochin Chapter. Workshop provided in-depth knowledge in the basic concept of wired and wireless routing protocol, NS2 simulation tool.*

*A brainstorming session by Mr Mohit P Tahiliani from NITK Surathkal gave an idea how to use this tool for simulating wired and wireless routing protocols and implementing a new MANET routing protocol using NS2. Mr Sumesh T A, Assistant professor, NIT Calicut handled an introductory session related with wireless protocols.*

*Mr Robin Cyriac, Assistant Professor from Department of Computer Science and Ms Preetha K G and Ms Jisha G, Assistant Professors from Department of IT also handled various sessions, in which they have shared their knowledge on various topics with everyone.*

*The workshop was a great success. Faculties and students from all over India have attended this workshop and was greatly benefited out of it. The hard work behind the same was the coordinators, Ms Preetha K G and Ms Jisha G, Assistant Professors from IT Department.*

# First International Conference on Advances in Computing and Communications (ACC-2011) July 22 -24, 2011

- International Workshop on Multimedia Streaming (MultiStreams2011)
- Second International Workshop on Trust Management in P2P Systems (IWTMP2PS2011)
- International workshop on Cloud Computing: Architecture, Algorithms and Applications (Cloud-Comp2011)
- International Workshop on Identity: Security, Management & Applications (ID2011)
- International Workshop on Applications of Signal Processing (I-WASP 2011)
- Social Events.



First International conference on Advances in Computing and Communications was hosted by Department of IT and CS from July 22-24,2011. The conference was inaugurated by Dr. Achuthsankar S.Nair,(Director, Centre for Bioinformatics, University of Kerala) on 22nd July

ACC2011 provided the most relevant opportunity to bring together students, researchers and practitioners from both academia and industry. The conference included a peer reviewed program of technical sessions, workshops, tutorials, and demonstration sessions. Conference proceedings were published by Springer in Communications in Computer and Information Science Series (CCIS), ISSN: 1865:0929.

### Highlights of ACC2011 include

- Fourteen Invited talks by eminent researchers
- Presentations of 234 outstanding papers selected from 592 papers across 38 countries
- Three tutorials on recent topics
- Two demonstration sessions
- Proceedings published by Springer-Verlag, Germany
- Nine well indexed journals for post conference publications



## i-TRAX INAUGURATION



*i-TRAX(2011-2012), Association of Information Technology Department, was inaugurated by Mr.S.Thomas, CTO, VVDN Technologies Pvt Ltd, on Thursday 4th August 2011 .An excellent speech was given on the scope of IT which has helped the student understand wider areas of IT in engineering. Student representatives were selected for the year 2011-2012 and have assigned duties for better performance of i-TRAX.*

- |                         |                   |
|-------------------------|-------------------|
| Chairman                | - Balu V Thayil   |
| Vice Chairman           | - Ashwana Kurian  |
| Treasurer               | - Smithu Izudheen |
| Secretary               | - Milan Koshy     |
| Documentation In Charge | - Jeni James      |
| Student Representative  | - Najath          |

## Logic Development & Introduction to Programming June 21- 27, 2011

*Logic Development and Introduction to Programming Course was organized by Department of IT and CS from June 21 to June 27, 2011.The Objective of the course was to ensure the equality of non computer science students with others. 61 students from all the departments participated in this course.*

*The course was designed for 6 days. The forenoon session was formulated with and the afternoon session with group activities. This really made the course more interesting. For the activity they have divided the students to groups comprising of 6 students guided by a faculty. These activities helped the students to understand the creative and innovative problem solving techniques in a simpler and interesting way. Towards the end of the course each student was awarded with a grade based on the performance in assignments and exit test.*

*Ms Saritha S, Assistant Professor from Department of IT and Ms Elizabeth Issac, Assistant Professor from Department of CS were the coordinators of the bridge course.*



## On Creative Desk

**Prof. Kuttyamma A.J. | Jisha. G | Krishnadas Naduvath | Balu V Thayil | Bobby Kariyatty**  
Department of Information Technology